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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/801,402

03/15/2004

Hiroshi Naiki

04175/LH

1669

1933

7590

12/16/2004

FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
767 THIRD AVENUE
25TH FLOOR
NEW YORK, NY 10017-2023

EXAMINER

ROSENBERGER, RICHARD A

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/801,402

Applicant(s)

NAIKI ET AL.

Examiner

Richard A Rosenberger

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 16-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 16-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, and 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzawa (JP 9-61365) in view of Takeuchi et al (US 6,594,012), Maeda et al (US 6,621,571), Mizuna et al (JP 11-219990) and Smedt (US 6,6559,938).

Matsuzawa shows a defect inspection device in which images are received at a plurality of different angles (see figures 5 and 6), including both regular reflection (35b in figure 5, 35a in figure 6) and scattered light (for example, 35c in both figures).

Matsuzawa shows using a plurality of different detector arrangements for each angle. It is known in the art to do similar tests by moving the light source and detector to the different angles to do a plurality of measurements at different angles; this is shown by Takeuchi et al, in which the light source (31) and the detector (32) are moved to the desired positions for tests. It would have been obvious to so move the light source and/or detectors of Matsuzawa because this is a known

manner of making measurements at different angles and requires only a single detector and/or light source rather than a plurality.

Matsuzawa shows a “moving section” which moves the sample so that the entire sample is inspected. One known manner of effecting this type of scan is to reciprocate the sample in one direction while moving it in the other so the entire sample will come to be presented to the test apparatus; see Maeda et al (US 6,621,571) in which images are obtained from a sample and the “moving section” effects the scan by reciprocating the sample; not the double-headed arrow indicating this reciprocation in figure 1 of Maeda et al. It would have been obvious to use this known scanning technique in the system of Matsuzawa because it is a known manner of effecting the scan that is taught by that reference.

It is known in that art to inspect both the front and the back of a sample; see Mizuno et al, which shows holding the sample in a manner that leaves both sides open to inspection (see figures 1 and 2 of Mizuno et al for inspecting both sides in a manner which required that both sides be optically open to inspection). It would have been obvious to inspect both sides of the sample using a system such as is shown by Matsuzawa because it is known in the art that both sides should be inspected, and, as shown by Mizuno et al, is it known this can be done by leaving both sides open to inspection.

Inspecting both sides of a sample is known, and it is known that both sides need to be acceptable, which means if either side measured unacceptable then the

sample is unacceptable. Smedt discusses this, column 1, lines 27-34. When the tests are made simultaneously, as shown by Mizuno et al, the test results will be combined such that either side registering as defective will combine to generate a decision that the sample will be defective. This is a logical OR, which is also known as adding the logical results of the two tests. It would have been obvious to use such a combination because such a combination is at least effectively required to make the decision needed as taught in the art.

Using the same inspection arrangement on both sides to detect the two sides would have been obvious. Those in the art could choose illumination that is appropriate for the particular test being performed.

When inspecting both sides of a sample, the inspections can be performed simultaneously, as shows in Mizuno et al, with the defect measuring arrangements on both sides of the sample (instant claim 18) or sequentially, as discussed in Smedt; it is the inspection of both sides that is of importance, not the particular order of the inspections. Smedt teaches it is known in the art to turn the sample over to inspect the back side, and shows a holder that is capable of turning the sample sufficiently that the back can be presented without removing the sample from the holder. It would have been obvious to use a holder that can turn the sample over because, as taught by Smedt, this reduces the handling of the sample and can improve overall quality by reducing damage to the wafer (instant claim 17).

When using two test apparatuses, one of each side, there is no need to have the two

perform the test simultaneously, it would have been obvious to make on measurement and then move the sample to the other device (instant claim 20).

In the holder the sample must have both sides optically open to inspection; but there is not requirement, nor would those in the art believe there was a requirement; it would have been obvious to support the sample on a transparent support because a transparent support would leave the back optically open to inspections which supporting the sample (instant claim 19).

Clearly it would have been obvious to provide sufficient clearance in the system to obtain the necessary images for the inspection; the inspection could not be carried out if sufficient clearance were not provided (claims 21 and 22).

As to claim 23, in instant disclosure discloses that regular reflection and other than regular reflection images are synthesized, but does not appear to teach how such synthesis is done; there appears to be no description or the algorithm used. Thus it appears that this claimed "synthesis" is presented in the specifications as material which is so well-known in the art that mere mention is adequate disclosure; the instant disclosure appears consistent only with this material being well-known in the art, assuming the disclosure is adequate under 35 USC 112, first paragraph. It would have be obvious to use this known technique to combine the images.

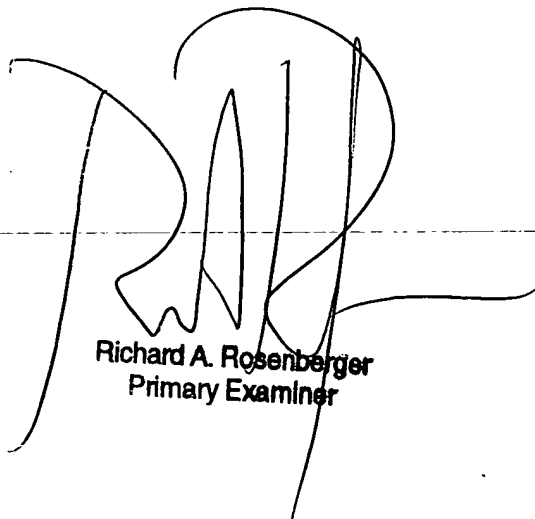
3. Suzuki et al (US 5,359,407) and Moran (US 4,875,780) shows other known systems that inspect both sides of a sample using holding means that leave both sides open to inspection.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger
13 December 2004



Richard A. Rosenberger
Primary Examiner